

# Chapter Six

## SENSITIVITY ANALYSIS

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### 6.1 INTRODUCTION

The purpose of this chapter is to estimate aviation impacts of the terrorist attacks of September 11, 2001 in Virginia, and to calculate the effects of those impacts on the Commonwealth's economy in 2002. First, high and low scenarios are presented to illustrate the reduction in visitor spending and the resultant spin-off impacts that ripple throughout the Virginia economy. Second, a discussion at the end of this chapter reviews changes in jet fuel revenues collected by the Commonwealth as a consequence of the attacks.

The estimates of visitor spending are based on the reduction of activities at Ronald Reagan Washington National Airport (DCA) and Washington Dulles International Airport (IAD) in the year following the attack. DCA and IAD are the two commercial airports in Virginia that serve the District of Columbia metropolitan area, including parts of Virginia, Maryland and West Virginia, as well as the District.

It is, of course, difficult to disaggregate impacts of aviation that occurred due to "9/11" and those due to sluggish performances of the national and regional economies. In the discussion below, some of the fall-off in visitor traffic is attributed to the economy as well as to the aftermath of the attacks. In addition to the two Virginia airports, data for Baltimore-Washington International Airport (BWI) in Maryland is provided for comparison purposes, given its status as the third major commercial airport in metropolitan Washington D.C.

This analysis is composed of the following parts:

1. **General aviation activities.** As a consequence of September 11, GA traffic has been banned from DCA, and roughly 11 percent of the former DCA general aviation (GA) operations now use Maryland instead of Virginia airports.<sup>8</sup> This results in less visitor spending by itinerant GA arrivals.
2. **Commercial enplanements.** Enplanements in 2002 at DCA have declined at a greater rate than at IAD, and both have declined at greater rates than at BWI when measured against both enplanements in 2000 and average enplanements from 1995 to 2000.<sup>9</sup>
3. **Fuel Jet A Tax.** This is a net benefit to Virginia and is discussed after the analysis of visitor impacts. DCA is exempt from the Virginia Aviation Fuel Tax. Redirecting GA operations that had used DCA to other Virginia airports results in roughly \$300,000 of additional tax revenues to the Commonwealth's Aviation Special Fund.

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<sup>8</sup> Source: Signature Flight Support, the sole FBO at DCA.

<sup>9</sup> This analysis uses passenger numbers from April 2002 through March 2003 to avoid biasing this exercise based on the unique restriction imposed on Ronald Reagan Washington National Airport from September 11, 2001 to March 2002.

Assumptions gleaned from expert testimony and other studies that are used in this chapter are listed below.

- Signature Flight Support, the sole FBO at DCA, estimates that 85 percent of their former GA traffic that was served at Reagan-National Airport now goes to IAD, three percent to Manassas, one percent to Leesburg and 11 percent to BWI. In sum, 89 percent of general aviation operations that would have used DCA but for September 11 have been relocated to other airports in Virginia, with remaining operations relocated to airports outside of the Commonwealth.
- Methods used in previous studies of the Virginia airport system lead to an assumption that 52.1 percent of economic activities at DCA and 72 percent of economic activities at IAD accrue to the Commonwealth. To maintain consistency with these past efforts, the 2002 study uses this estimate and it is applied when appropriate in this chapter.

The following sections of this chapter are organized as follows:

- 6.2 Summary of findings of Visitor Spending Impacts
- 6.3 Economic effects of the high and low estimate
- 6.4 A detailed examination of data used for this analysis and how the high and low scenarios are developed
- 6.5 A review of tax impacts from the Jet A Fuel sales generated by General Aviation at DCA in 2000.

## 6.2 SUMMARY OF FINDINGS FOR VISITOR SPENDING IMPACTS

High and low scenarios for general aviation and commercial enplanements were developed to gauge how many aviation visitors no longer travel to Virginia due to the events of September 11. The key drivers of each design are found below.

### General Aviation:

- **High impacts** are based on extending annual 1998-2000 growth trends at DCA through 2002. Itinerant operations are assumed to be the average proportion of itinerant operations during the 1998-2000.
- **Low impacts** are based on average annual operations and the lowest annual rate of itinerant operations over the three-year span of 1998-2000.

### Commercial Enplanements:

- **High impacts** are based on comparing declines of enplanements in 2002 and 2000 at DCA and IAD to assessments of how each airport fared during the previous two national economic slumps (1987-91 and 1980-82).
- **Low impacts** are based on comparing the average annual enplanements at DCA and IAD from 1995 through 2000 with enplanements during 2002.

### Impacts on Virginia

The framework described above yields impact estimates of \$363 - \$752 million in 2002 visitor spending that are attributable to the attacks of September 11, 2001. Of these totals \$218 million - \$454 million are in the expected initial spending of visitors that would have arrived to the Commonwealth through DCA and IAD. **Table 6.1** presents estimates of negative impacts in Virginia stemming from fall offs at DCA and IAD of general aviation operations and commercial enplanements due to the events of September 11.

Table 6.1

#### Impacts of Reduced Visitor Spending Due to September 11 (2002 dollars)

	Initial Visitor Spending in VA	Spin-off Effects	Total Effects of September 11 on the VA Economy
<b>Jobs</b>			
Low Estimate	5,475	1,808	<b>7,283</b>
High Estimate	11,612	3,732	<b>15,344</b>
<b>Wages</b>			
Low Estimate	\$90,147,000	\$53,723,000	<b>\$143,870,000</b>
High Estimate	\$188,517,000	\$110,806,000	<b>\$299,323,000</b>
<b>Business Sales</b>			
Low Estimate	\$218,496,000	\$144,264,000	<b>\$362,760,000</b>
High Estimate	\$453,916,000	\$297,847,000	<b>\$751,763,000</b>

Source: Spin-off effects are calculated through the IMPLAN Model. Calculations by EDR Group

### 6.3 ECONOMIC IMPACTS IN VIRGINIA

These scenarios reflect aviation visitors arriving through DCA and IAD would have generated visitor spending that. As shown in **Table 6.1**, the overall band of annual economic impacts to the Commonwealth is \$363 - \$752 million, as initial spending by visitors generates additional business sales by companies that serve visitors, as well as spending of wages by workers in the visitor industries.

Spending by visitors is heavily weighted toward the services and retail trade sectors, but the economic ripples of visitor spending are felt in all sectors of the Commonwealth's economy. At the high end of these estimates, losses of business sales include \$67 million in finance, insurance and real estate, \$35 million in transportation, communications and utilities and nearly \$34 million in manufacturing, as well as \$339 million in services and \$241 million in the retail sector. As demonstrated in **Table 6.2**, the difference in proportions between the high and low estimates is that lower scenario shows a slightly higher ratio of spending for lodging services and less for retail, including food and beverage. For each sector, the proportional difference between the two scenarios is less than 2 percent.

Table 6.2

**Impacts of Visitor Spending Loss in the Virginia Economy by Sector**

Sector	High Impact Scenario		Low Impact Scenario	
	Total Loss Attributed to 9/11	Percent by Sector	Total Loss Attributed to 9/11	Percent by Sector
Agriculture	\$3,551,000	0.5%	\$1,728,000	0.5%
Mining	\$719,000	0.1%	\$349,000	0.1%
Construction	\$11,833,000	1.6%	\$5,783,000	1.6%
Manufacturing	\$33,593,000	4.5%	\$16,256,000	4.5%
Transportation, Communications & Public Utilities	\$35,049,000	4.7%	\$17,079,000	4.7%
Retail Trade	\$240,657,000	32.0%	\$111,167,000	30.6%
Wholesale Trade	\$12,049,000	1.6%	\$5,838,000	1.6%
Finance, Insurance & Real Estate	\$67,401,000	9.0%	\$32,681,000	9.0%
Hotel & Lodging	\$202,357,000	26.9%	\$104,482,000	28.8%
Other Services	\$136,311,000	18.1%	\$63,399,000	17.5%
Government	\$7,769,000	1.0%	\$3,770,000	1.0%
Other	\$474,000	0.1%	\$228,000	0.1%
Totals	\$751,763,000	100.0%	\$362,760,000	100.0%

Source: Martin Associates, MWAA, 2002 Virginia Aviation Study, IMPLAN

**6.4 DETAILED DATA AND THE DEVELOPMENT OF ESTIMATES****6.4.1 General Aviation**

In the aftermath of September 11, GA operations were prohibited at DCA. As depicted in **Table 6.3**, during 2000, the number GA operations at IAD and DCA were similar, with over 59,000 operations at each airport. However, operations at DCA had increased by over 14 percent in the three years from 1998 through 2000, while GA operations at IAD decreased by almost 10 percent during the same period. Itinerant operations as a percentage of total GA operation at DCA were 95 percent in 1998, 78 percent in 1999 and 75 percent in 2000, averaging 83 percent over the three years.

Table 6.3

**Total GA Operations at DCA and IAD**

	<b>IAD</b>	<b>DCA</b>	<b>Total</b>
1998	65,838	51,808	117,646
1999	64,419	60,790	125,209
2000	59,405	59,292	118,697
Change 1998-2000	-9.8%	14.4%	0.9%
2002	81,775	N/A	N/A

Sources: MWAA Final Draft Aviation Activity Forecasts for Washington Dulles International Airport - October 2000 (HNTB), MWAA Activity Forecasts for Ronald Reagan Washington National Airport - 2002 (HNTB), FAA ATADS data and HNTB Analysis.

- **Low Estimate:** The low-estimate is calculated as 11 percent of the midpoint of (1) average number of GA operations at DCA from 1998 through 2000, and (2) extended trends if the changes at DCA from 1998-2000 were carried forward through 2002. To estimate the number of itinerant operations, this estimate assumes the lowest annual rate of such operations observed during the 1998-2000 period.

Annual GA operations at DCA during 1998-2000 averaged 57,297. If the 1998-2000 trends continued at the airport through the year 2002, there would have been 67,857 operations.<sup>10</sup> Applying the 11 percent benchmark of potential GA operations at DCA that no longer use Virginia airports yields between 6,303 and 7,464 operations. The midpoint is 6,883. Using an assumption that 75 percent of 2002 GA operations would have been itinerant (the lowest annual rate of the three year period) results in an estimate of 5,163 itinerant GA operations for this scenario.

- **High Estimate:** Annual GA operations at IAD and DCA combined averaged 120,517 during 1998-2000. However, if the 1998-2000 trends continued at both airports through the year 2002, there would have been 121,458 operations at both airports.

Allowing for 4 percent of total expected operations diverting to Manassas and Leesburg (per estimate of Signature Flight Support), the shortfall to VA in 2002 range from 15,241 to 15,711 operations after accounting for the Commonwealth's share of impacts (assumed at 52.1 percent of the total, as discussed above). The midpoint is 15,476 operations.

Assuming that 83 percent of operations would have been itinerant (the 1998-2000 annual

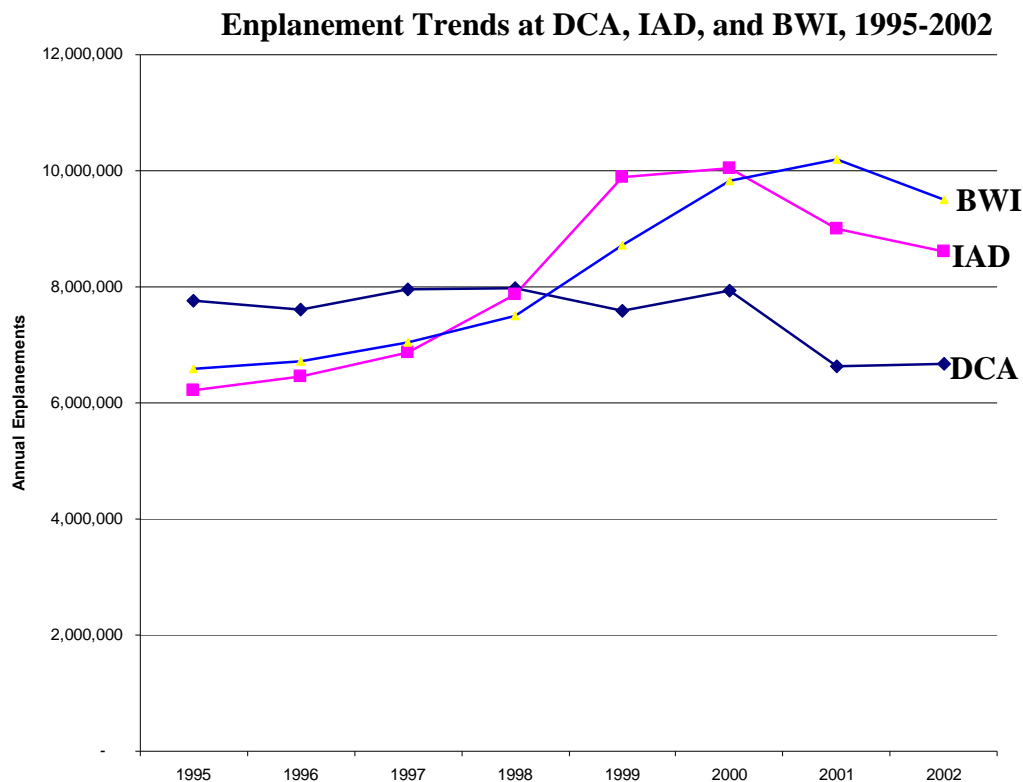
<sup>10</sup> The trends extended projection of 67,857 operations at DCA approach the maximum feasible general aviation operations at the airport. Prior to September 11, the FAA allocated 12 general aviation slots per hour at DCA from 7 AM through 9 PM. These 15 hours amount to 180 slots per day, or 65,700 per year. In good weather the FAA Air Traffic Control would permit more operations in than there were slots, as allowed by the rule. Thus, 67,857 operations in a year would have been possible. (Source: General Counsel, Washington Metropolitan Airport Authority.)

average at DCA) results in an estimate of 12,845 itinerant operations that do not use Virginia airports due to September 11.

#### 6.4.2 Commercial Aviation

Through 1997, commercial passenger traffic at DCA was significantly higher than at IAD or BWI, but by 2002 enplanements at DCA have fallen behind the other two metropolitan airports. (See **Figure 6-1**). Starting 1997 through 2000, enplanements at IAD and BWI grew rapidly, while the level at DCA held steady. In 1998, passenger levels at all three airports were relatively even, and by 2000 enplanements at IAD and BWI exceeded DCA by 2.1 million and 1.9 million, respectively.<sup>11</sup>

**Figure 6-1**



Sources: Sources: [www.mwaa.com](http://www.mwaa.com), and the Maryland Aviation Administration. Note: Enplanement totals for DCA and IAD are estimates based on 50 percent of passenger totals reported on the Metropolitan Washington Airports Authority web site.

<sup>11</sup> A major reason for the strong performance of BWI is the presence and expansion of Southwest Airlines at the airport. Southwest began service at BWI in 1993 and has expanded in both service and facilities in subsequent years. (See [www.bwiairport.com](http://www.bwiairport.com).)

### Enplanements in 2002 Compared to 2000

Commercial enplanements were stable at DCA in the years 1995 to 2000. Enplanements in 2000 were 2.5 percent above 1995 levels, as annual enplanements averaged 7.81 million and ranged between 7.59 million and 7.99 during each of those six years. In contrast, 2000 enplanements at IAD were 62 percent above 1995, and enplanements at BWI increased by 49 percent. Enplanements in 2002 were below 2000 levels at both airports, by 14.3 percent at IAD and 3.2 percent at BWI. Both are less pronounced declines than the 15.9 percent drop-off at DCA, despite the steep growth at IAD and BWI compared to the flat trend at DCA through 2000.

### Enplanements in 2002 Compared to Average Annual Enplanements, 1995-2000

As shown in **Table 6.4**, both IAD and BWI served more enplanements in 2002 than the average annual totals during the years 1995 to 2000, while the decline at DCA in 2002 exceeded 14 percent of its 1995-2002 annual average. This drop-off is especially eye-catching given the steadiness of annual enplanements at DCA during the 1995-2000-time span.

Table 6.4

**Enplanements at DCA, IAD and BWI, 1995-2000 and 2002**

Year & Averages	DCA	IAD	BWI
1995	7,753,122	6,221,829	6,581,509
1996	7,613,250	6,447,014	6,715,961
1997	7,953,503	6,878,931	7,047,153
1998	7,985,153	7,873,171	7,504,114
1999	7,592,674	9,898,665	8,718,832
2000	7,944,100	10,052,347	9,817,230
2001	6,632,694	9,001,160	10,187,558
2002	6,680,952	8,617,582	9,504,767
Total percent change 1995-2000	2.5%	61.6%	49.2%
Percent Change 2000 to 2002	-15.9%	-14.3%	-3.2%
Average 1995-2000	7,806,967	7,895,326	7,730,800
Percent Change Average 1995-2000 to 2002	-14.4%	9.1%	22.9%

Sources: [www.mwaa.com](http://www.mwaa.com), and the Maryland Aviation Administration.

Note: Enplanements for IAD and DCA are based on 50 percent of annual passengers.

"2002" enplanements for DCA are 50 percent of the total of monthly passenger data from April 2002 through March 2003.

**High Scenario.** The high estimate is constructed from the difference between 2000 and 2002 enplanements at DCA and IAD.

This estimate assumes 6.15 percent of the 2000 to 2002 air passenger decline at DCA is due to the sluggish economy and that the remaining portion of the decline is a consequence of the attacks of September 11. However, also assumed is that the entire 14.3 percent drop-off of enplaned passengers at IAD is caused by September 11. The reasoning behind these assumptions is based on the performance of each airport during the past two recessions:

- Enplanements at DCA fell 3.9 percent from 1987 through 1991 and 8.4 percent from 1980-1982. The 6.15 percent assumption used in this scenario is the midpoint the rate of decrease observed during these previous economic downturns; and.
- Enplanements at IAD were stable during the past two slumps. From 1987-1991, enplanements increased by 0.1 percent, and during the 1980-1982 period, enplanements decreased by 0.01 percent.

Thus, this estimate assumes that 9.75 percent of the 2000-2002/3 decline of enplanements at DCA is attributable to September 11, and 6.15 percent of the decline would have happened anyway due to the recent economic downturn. In addition, the 14.3 percent decline seen at IAD is attributed to September 11.

Past studies are used to calculate the proportion of enplaned passengers who are visitors to Virginia. A June 2003 study commissioned by the Metropolitan Washington Airport Authority, estimates that visitors comprise 53 percent of enplanements at DCA and 41 percent at IAD.<sup>12</sup> Finally, as noted earlier, past studies of the Commonwealth's airport system use a methodology estimates a Virginia share of economic impacts at 52.1 percent of DCA impacts and 72 percent of IAD impacts. Calculations are shown in **Table 6.5**.

Table 6.5

**Calculation of Enplanements for High Scenario**

Step	Visitors
2000 Enplanements at DCA	7,944,100
Percent difference 2000-2002/3	-15.90%
Percent difference attributed to economy	-6.15%
Percent difference attributed to "9/11"	-9.75%
Number Enplanements attributed to "9/11"	(774,550)
Visitor share @ 53%	(410,512)
<b>Subtotal: DCA Impacts in VA @ 52.1 percent (used by past airport system studies)</b>	(210,182)
2000 Enplanements at IAD	10,052,347
Percent difference 2000-2002	-14.3%
Percent difference attributed to "9/11"	-14.3%
Number Enplanements attributed to "9/11"	(1,437,486)
Visitor share @ 41%	(589,369)
<b>Subtotal: IAD Impacts in VA @ 72 percent (used by past airport system studies)</b>	(424,346)
<b>Total Commercial Visitor Loss to Virginia Attributed to 9/11 – High Scenario</b>	(634,528)

Sources: [www.mwaa.com](http://www.mwaa.com), calculations by EDR Group

<sup>12</sup> Martin Associates, The Local and Regional Economic Impacts of Ronald Reagan Washington National and Washington Dulles International Airports, prepared for the Metropolitan Washington Airports Authority, June 9, 2003, p.36.



**Low Scenario.** This estimate is based on the comparison of 2002/3 enplanements at DCA with the average enplanements at the airport from 1995 through 2000. (See **Table 6.6**) In this estimate, the 2002 underperformance of 14.4 percent of enplanements at DCA is assumed to be a consequence of September 11. Underlying this assumption is:

- The virtually unchanging annual level of enplanements at DCA from 1995 through 2000, making the dramatic decline to 2002/3 significant. Annual enplanements in the years immediately prior to the past two economic slumps were not nearly as stable as the totals in the years 1995 through 2000; and
- The level of enplanements at both IAD and BWI were higher in 2002 than their annual averages from 1995 through 2000.

The difference at DCA between 2002 and 1995-2000 average annual enplanements is a fall-off of 1,366,166 enplanements. Applying the estimated visitor share of 53 percent and the “Virginia impact factor” of 52.1 percent produces an estimated drop in visitors to the commonwealth of 310,000. Calculations are shown in **Table 6.6**.

Table 6.6

**Calculation of Enplanements for Low Estimate**

Step	Visitors
1995-2000 annual average enplanements at DCA	7,806,967
Percent difference 1995-00 annual average - 2002	-14.4%
Number Enplanements attributed to "9/11"	(1,124,203)
Visitor share @ 53%	(595,828)
<b>Impacts in VA @ 52.1%</b> (used by past airport system studies)	(310,426)

Source: [www.mwaa.com](http://www.mwaa.com), calculations by EDR Group

### 6.4.3 Direct Impacts of Low and High Scenarios

Estimates of annual visitor spending impacts in Virginia resulting from September 11 range between \$218 million and \$454 million, as shown in **Table 6.7**.

Table 6.7

**Calculation of High and Low Impacts of Visitor Spending in Virginia**

	Low Estimate	High Estimate
<b>1. General Aviation</b>		
Itinerant operations that no longer use VA airports	5,163	12,845
Fewer visitors to VA <sup>1</sup>	22,975	57,160
<b>Subtotal: GA Visitor Spending Shortfall in VA<sup>2</sup></b>	<b>\$3,060,000</b>	<b>\$7,613,000</b>
<b>2. Commercial Enplanements</b>		
Commercial Visitors that do not use IAD or DCA due to September 11.	310,426	634,528
<b>Subtotal: Visitor Spending of Commercial Visitors Shortfall to VA<sup>3</sup></b>	<b>\$215,436,000</b>	<b>\$446,303,000</b>
<b>Total Direct Visitor Shortfall in VA</b>	<b>\$218,496,000</b>	<b>\$ 453,916,000</b>

Sources: [www.mwaa.com](http://www.mwaa.com), The Local and Regional Economic Impacts of Ronald Reagan Washington National and Washington Dulles International Airports, June 2003. Calculations by EDR Group.

<sup>1</sup> These estimates employ GA survey data from the 2002 Virginia Airport system Study: GA flights to commercial airports carry an average of 4.45 passengers per operation, including pilots.

<sup>2</sup> Each visitor spends an average of \$133.19 per visit.

<sup>3</sup> The above referenced study estimates visitor spending at \$708 for visitors arriving at IAD and \$694 for visitors arriving through DCA.

## 6.5 FUEL TAX

DCA is exempt from Virginia's Aviation Fuel Tax. Following September 11, GA operations have been prohibited at DCA, and have therefore been redirected to other Virginia airports, where Aviation Fuel Tax is charged. This transfer of GA activity is adding an estimated \$270,000 to \$312,000 per year into the Aviation Special Fund. To establish a range of impacts, this study uses the GA operation totals of 2000 and the potential operations of 2002, which are based on observed trends from 1998 through 2000

### Background

Jet fuel sales tax revenues had been increasing in Virginia prior to September 11, 2001, and have dramatically grown since that date. Revenues increased from \$2.6 million to \$3.2 million from Fiscal Year 1998 through FY 2001. In FY 2002, the year that included the terrorist attacks, the Commonwealth's revenues for jet fuel sales tax exceeded \$3.44 million, and increased again to nearly \$4.75 million the following year, as shown in **Table 6.8**.<sup>13</sup>

<sup>13</sup> The fiscal year is July 1 –June 30. FY 2003 is unedited. Due to data availability, this study uses calendar year 2003 instead of FY 2003.

Table 6.8

**Changes in Virginia Jet Fuel Tax  
Revenues, 1998 - 2003**

FY 1998	\$2,591,506
FY 1999	\$2,979,471
FY 2000	\$3,183,302
FY 2001	\$3,178,204
FY 2002	\$3,447,215
CY 2003	\$4,753,158

Fiscal Year years are July 1-June 30; 2003 is not audited and reported as a calendar year.

Sources: Department of Aviation Audits, FY 1998 – FY 2002, Auditor of Public Accounts, Commonwealth of Virginia, Monthly Fuel Tax Reports of the Virginia Department of Motor Vehicles.

Estimating how much of the increase from FY 2001 to 2003 can be attributed to September 11 and the subsequent curtailment of GA activities at Reagan-National Airport involves drawing together the Commonwealth's tax policies and rates, estimates of the scale of operations that are no longer carried out at DCA, fuel for general aviation that was sold at DCA in 2000 (the last complete year that GA was allowed) and the proportion of former DCA operations that now use Virginia airports. Details of these calculations are below.

**VA Tax Policies.** Fuel tax is collected directly by the Commonwealth from Licensed Aviation Consumers by the Virginia Department of Motor Vehicles.

**Tax Rates.** For the first 100,000 gallons purchased in a fiscal year, Licensed Aviation Consumers are charged \$.05 per gallon. The rate is \$.005 per gallon for additional fuel purchased in that year.<sup>14</sup>

**Operations and Fuel Sales at DCA in 2000.** In 2000, 6.1 million gallons of fuel were purchased by the FBO of DCA and 59,292 GA operations were conducted.<sup>15</sup> This analysis assumes that GA "aviation consumers" at DCA were small users who purchase less than 100,000 gallons of jet fuel per year.<sup>16</sup> Therefore, in 2000, the Commonwealth would have realized \$305,000, or five cents on the gallon, if Reagan-National Airport **was not exempt** from the jet aviation fuel tax.

**Trends Extended at DCA to 2002/3:** There were 51,808 GA operations at DCA in 1998 and 59,292 in 2000. If the growth trend continued through 2002, DCA would have hosted 67,857

<sup>14</sup> Source: Virginia Department of Motor Vehicles

<sup>15</sup> Source for fuel sales is Signature Flight Support. Operations are from Activity Forecasts for Ronald Reagan Washington National Airport - 2002 (HNTB)

<sup>16</sup> This is based on observations of DOA staff.

operations. For the purpose of this analysis, the 102.9gallons per-operation in 2000<sup>17</sup> will be assumed to be stable for 2002, implying approximately 7.0 million gallons of fuel that would have been used based on presumed 2002 DCA operations. Trends extended to 2002 are shown on **Table 6.9**.<sup>18</sup>

Table 6.9

**Estimated Gallons of Aviation Fuel Used at DCA**

Year	Operations	Gallons (Rounded to 100,000)
1998	51,808	5,300,000
2000	59,292	6,100,000
2002 (1998 – 2000 trends extended)	67,857	7,000,000

Gallons are calculated based on an assumed sale of 102.88 gallons per operation.

Source: Signature Flight Support for 2000 gallons, MWAA Final Draft Aviation Activity Forecasts for Ronald Reagan Washington National Airport. Calculations by EDR Group.

**Distribution of DCA General Aviation Operations.** Since September 11, GA operations that would have been carried out at DCA have had to use other airports. According to information obtained from Signature Flight Support, the only FBO at DCA, 89 percent of that traffic now uses Virginia airports (85 percent to IAD and 4 percent to Manassas and Leesburg, combined) and 11 percent use BWI, which does not add tax revenues to the Commonwealth.

DCA is exempt from the Commonwealth's jet fuel tax. By closing the airport to general aviation, GA operations that in the past used Reagan-National moved to Dulles, Leesburg and Manassas airports, where fuel tax is assessed, as well as out of state to BWI. The result has been additional tax revenues for Virginia. This chapter presents two potential ways of defining these additional revenues:

- (1) Assuming that the amount of fuel used for GA at DCA in 2000 remains constant through 2002 for operations that *would have used DCA in 2002/3*; and
- (2) Assuming that GA operations at DCA would have increased by the same rate they did increase from 1998-2000, and that fuel consumption would have increased at a corresponding rate.

<sup>17</sup> 6.1 million gallons sold at Reagan- National in 2000 divided by the 59,292 GA operations that year equals 102.88 gallons per operation. In turn the 102.88 gallons per operation multiplied by 67,857 operations in 2002 (assumed by trends extended) equals 6,981,173 gallons of jet fuel.

<sup>18</sup> Note, although fuel taxes are calculated on a fiscal year, calendar years are assumed for these data to coordinate operations, fuel sales and tax revenues.

Revenues calculated for both assumptions assume that Virginia is collecting 89% of potential revenues, with the remainder redirected to Maryland. The estimated range of tax revenues being realized by Virginia due to the rerouting of DCA's general aviation activity is presented in **Table 6.10**.

Table 6.10

**Estimates of Annual Fuel Tax Revenues Realized by Virginia Due to Curtailing GA Operations at DCA**

Basis for Estimate	Constant 2000	Extended Trends
Gallons of Fuel Sold	6,100,000	7,000,000
89 percent used by VA FBOs	5,429,000	6,230,000
Revenues to VA at \$.05 per Gallon of Fuel	271,450 <sup>1</sup>	\$311,500

Sources: Signature Flight Support and VA DMV. Calculations by EDR Group. Extended trends are rounded to an even 7 million.

**Jet Fuel Tax Summary.** In 2000, Signature Flight Support sold 6.1 million gallons of jet fuel to general aviation customers at Reagan National Airport. The airport is exempt from the Virginia Aviation Fuel Tax. If, however, the tax was charged at DCA, it would have resulted in \$305,000 for the Commonwealth. In the post September 11, 2001 era, Signature Flight Support estimates that 89% of former GA traffic at DCA has relocated to other Virginia airports, which collect the fuel tax. If, three years later, these GA customers again purchased 6.1 million gallons of fuel in 2002, than Virginia's Aviation Special Fund would have received \$271,450 due to relocation of flights from DCA due to September 11.

Assuming that general aviation operations and fuel sales would have grown from 2000-2002 at the same 14.4 percent observed from 1998 through 2000, roughly seven million gallons of fuel would have been sold at DCA in 2002. As a consequence of September 11, 2001 attacks, 89 percent of these potential GA operations and corresponding fuel sales have been disbursed to other Virginia airports, accounting for an estimated \$311,500 in revenue to Virginia's Aviation Special Fund that otherwise would not have been collected due to the tax-exempt status of DCA.